




Na putu prema gore

Patrik Franković, HEP d.d.
Zvonko Kutleša, Neos d.o.o.





Sadržaj

- ZAŠTO?
 - Postojeće stanje
 - Razlozi za transformaciju
 - KAKO?
 - Cloud u HEP-u
 - Transformacija
 - DevOps CI/CD arhitektura
 - ŠTO?
 - Dosad napravljeno
 - Planovi za budućnost
- 
- 
- 

HEP grupa

Vladajuće društvo

HEP d.d.

Sektor za informacijsko komunikacijske tehnologije (SIT)

Ovisna društva u 100% vlasništvu HEP-a d.d.



Društva u mješovitom vlasništvu



Društva u inozemstvu



Ustanove



Neovisni operator prijenosnog sustava



* društvo razdvojeno prema ITO modelu

Cloud u HEP-u

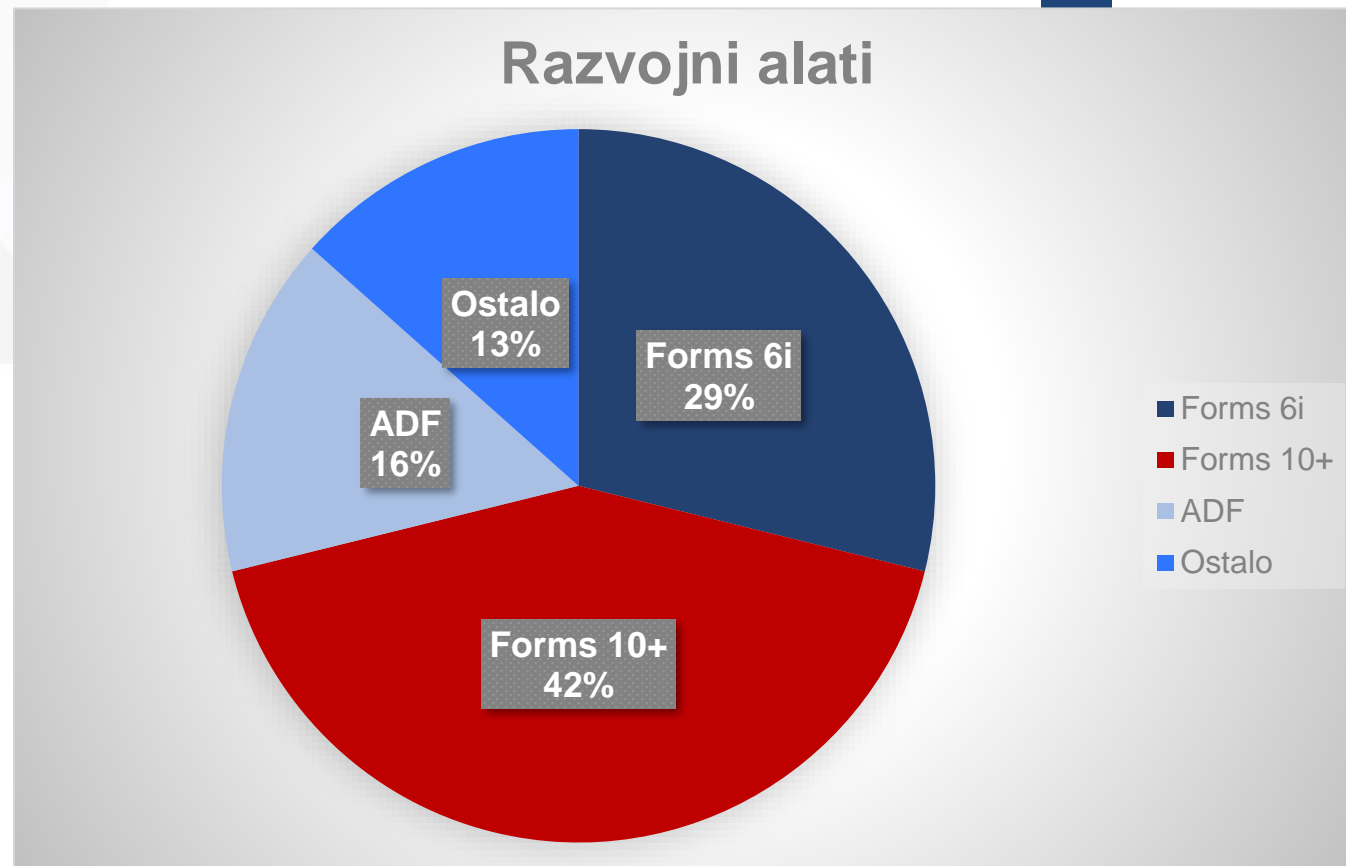


ZAŠTO? - Postojeće stanje

- Veliki broj in-house aplikacija
- 50+ developera
- Starija tehnologija i alati, ali vrlo stabilno produkcijsko okruženje
- Bez usvojene službene metodologije razvoja, ali ujednačeno upravljanje promjenama
- IT kao „uslužna” djelatnost
- Nabava umjesto razvoja

ZAŠTO? - Razvojni alati

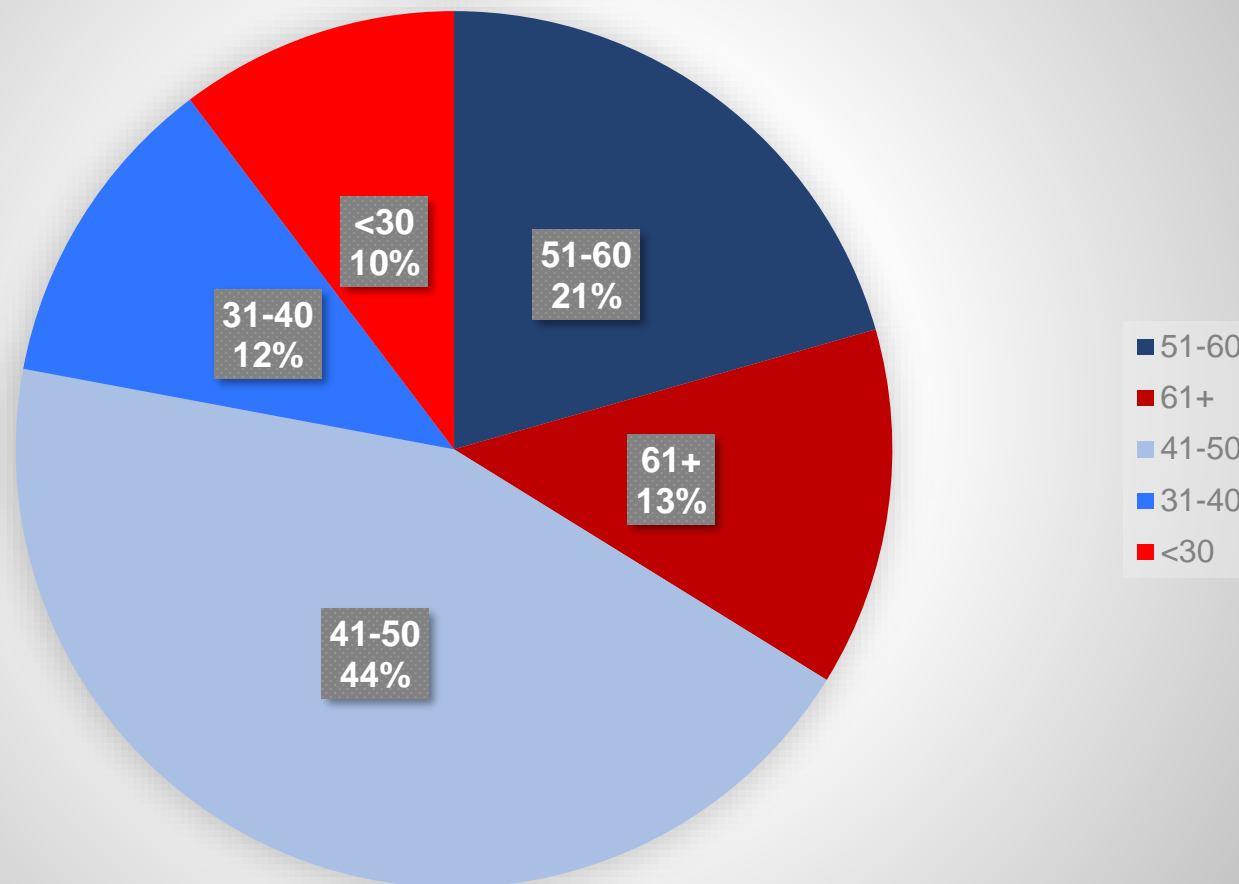
- Forms & Reports
 - 6i
 - 10g
 - 12c
- ADF
- .NET + Angular
- PL/SQL



ZAŠTO? – Ljudski resursi

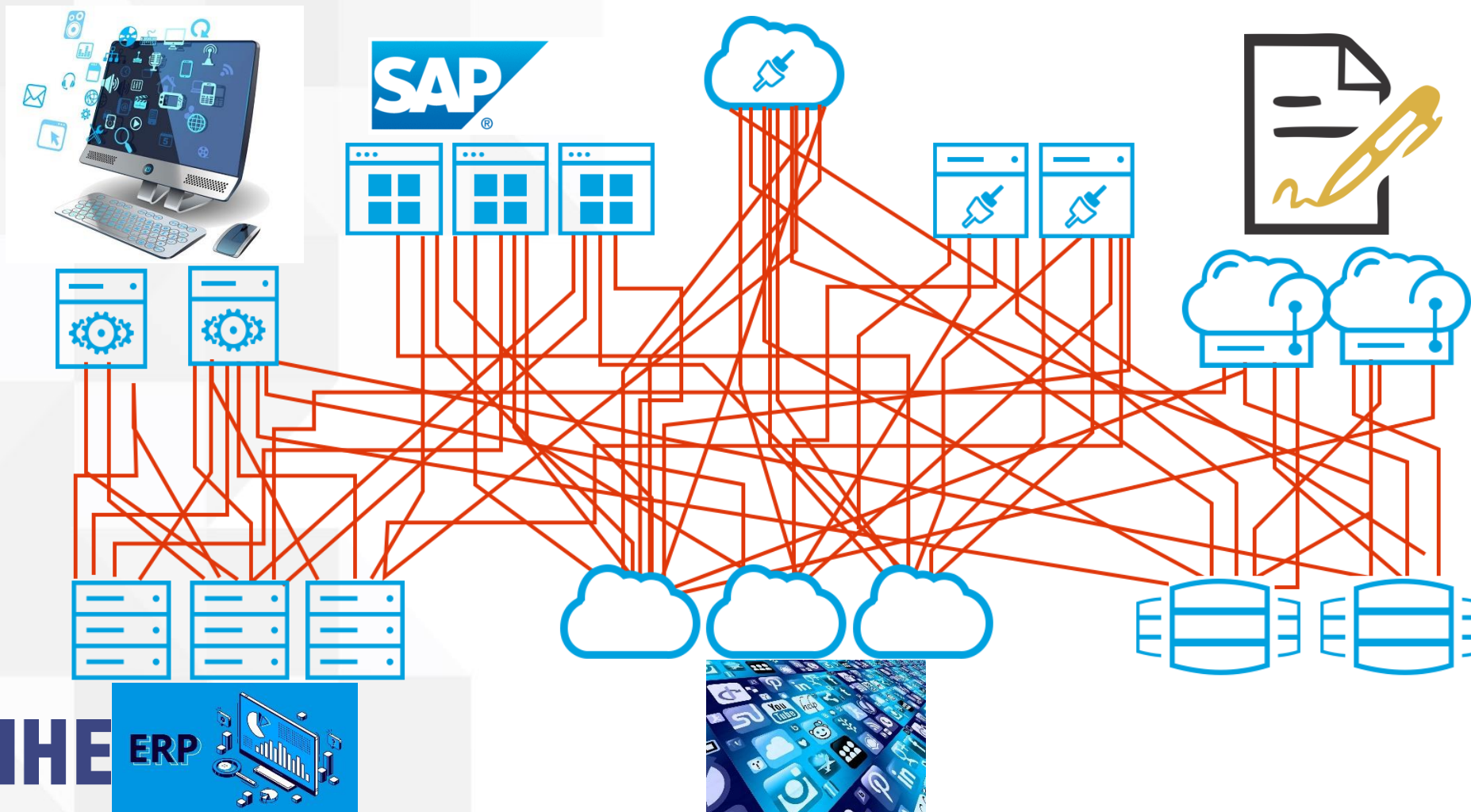
- 50+ developera
 - 40+ Forms
 - 5-10 ADF
 - 5-7 APEX
 - 1-3 Angular
 - 1-2 .NET
 - 1-3 Java

Developeri po godinama starosti



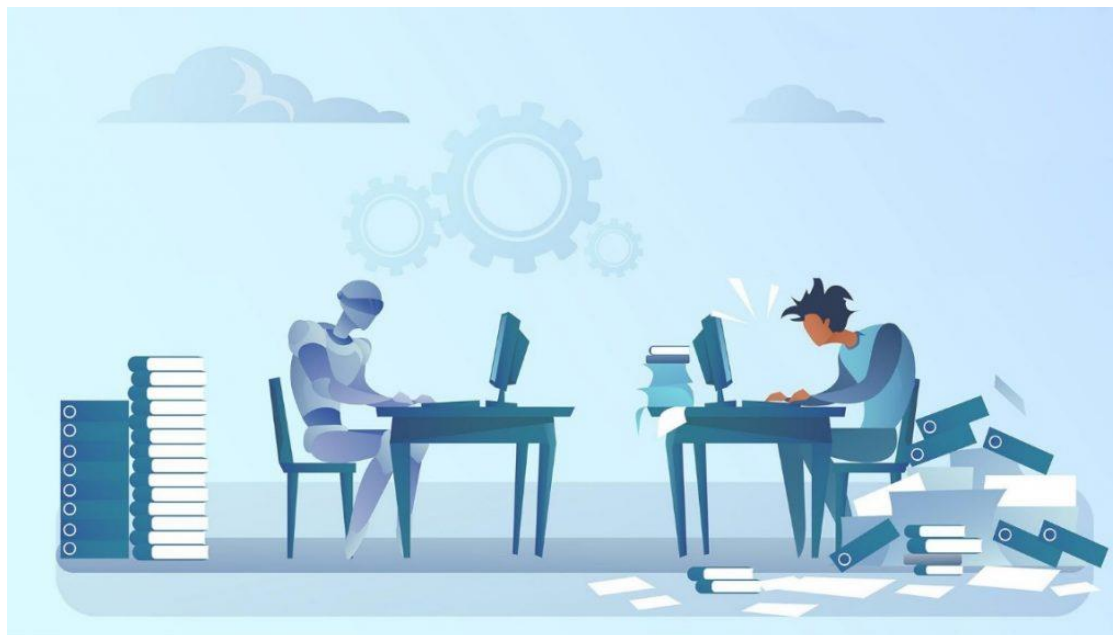
ZAŠTO? – Interoperabilnost

- sve veća interoperabilnost između različitih sustava



ZAŠTO? – DevOoops

- Neujednačen i često ad-hoc ručni deployment proces
- Verzioniranje samo kao arhiva, ne kao podloga za bolje praćenje promjena
- Nedostatak centralnog repozitorija koda
- Nedostatak automatiziranih testova
- Visoka opterećenost svih slojeva IT-a onemogućuje nadogradnju i sustavni razvoj



ZAŠTO? - Prilike

- Fokus na core business (energetskim) aplikacijama
 - Sve češći zahtjevi za promjenama uslijed tržišnih promjena
 - Nužno je reagirati brzo
 - Pouzdanost i raspoloživost 24/7
- Veliki broj potreba za aplikativnim rješenjima i podrškom u raznim energetskim poslovnim procesima
- Dodatna digitalizacija



ZAŠTO? - Ch-ch-ch-changes

- Promjene su nužne
 - Društvo
 - Tržište
 - Korisnici
 - Alati
 - Tehnologije
 - Navike



ZAŠTO? – Having fun



KAKO? - Cloud native

- Razvoj cloud native aplikacija
 - Mikroservisi
 - APEX
 - SAP
- SpringBoot i Angular
- 1 razvojni tim (9 developera)
 - back + front = full stack
- Za transformaciju izabrane mission critical aplikacije
- Potpuna promjene paradigme razvoja i metodologije
- NEOS – strateški partner i vodič

KAKO? – plan transformacije

- Uspostaviti 3-slojnu dev/test/prod arhitekturu i CI/CD pipeline
- Razvoj aplikativnih predložaka za ujednačavanje razvoja
- POC postojeće aplikacije s potpuno automatiziranim ciklusom
- Migracija baze na 19c
 - Preduvjet za migraciju .NET core

KAKO? - Izabrane aplikacije za transformaciju

Trade

- ADF
- Db 10g
- .NET servisi
- **Razvoj**

Vozni red

- Angular
- .NET
- Db 10g
- **Migracija**

Rezerve

- ADF
- Db 10g
- **Razvoj**

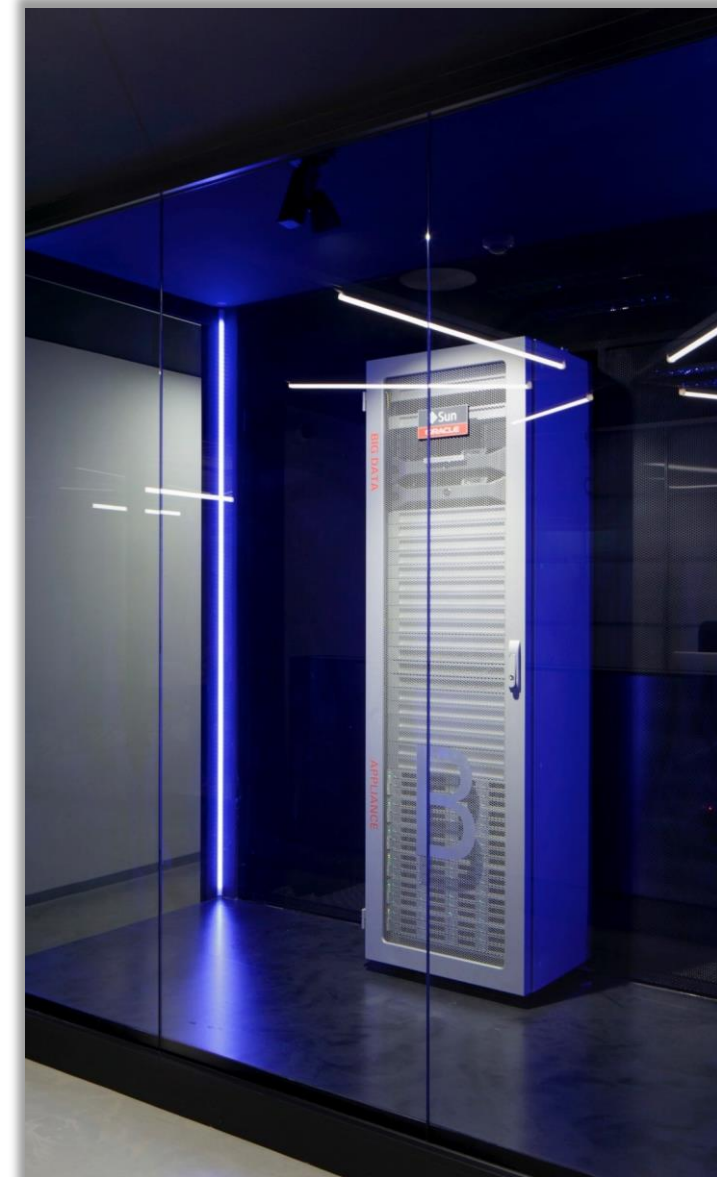
O NEOS-u

Osnovne informacije

- Osnovana 2002
- 80+ zaposlenih
- Data Analytics, Application Development, Cloud & System solutions
- Oracle Engineered Systems/Oracle Cloud/Multicloud
- 100+ uspješnih projekata
- Najmanje 1/3 internacionalnih projekata
- Spaja poslovne i tehnološke stručnosti

Kompetencije

- Preko 17 godina isustva
- Cerificirani zaposlenici (OCP, DW/BI, Java)



O NEOS-u

ORACLE | Partner

ORACLE | Build Partner

ORACLE | Service Partner

ORACLE | Sell Partner



Cloud Build Track

- Powered by Oracle Cloud
- Powered by Oracle Autonomous Database Cloud



Cloud Sell Track

- Oracle Cloud Platform



Cloud Service Track

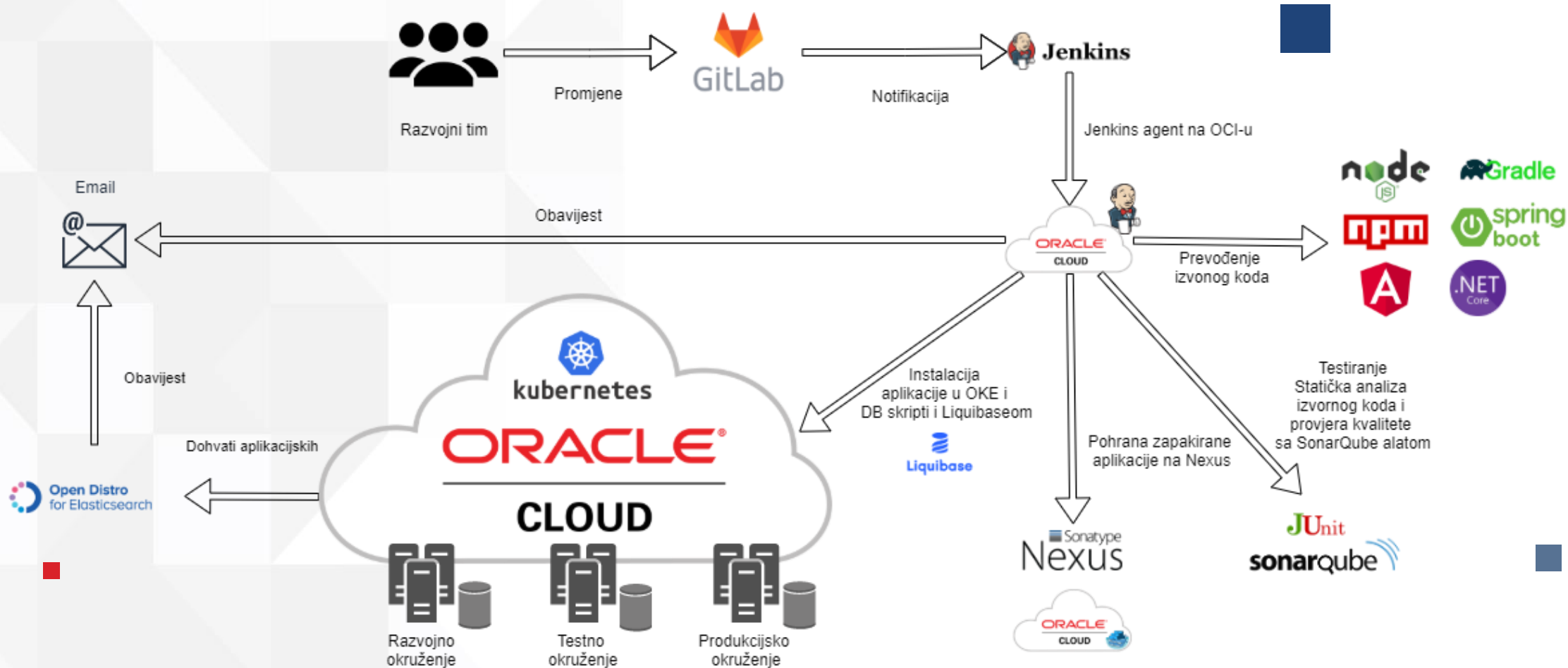
- Cloud Native Applications on Oracle Cloud
- Dev Ops on Oracle Cloud
- Oracle Cloud Platform Application Development
- Oracle Cloud Platform Business Analytics
- Oracle Cloud Platform Data Management
- Oracle Database to Oracle Cloud
- Microsoft Applications to Oracle Cloud
- Oracle Cloud Platform Integration



Licence & Hardware Track

- Installation SVC : Oracle Database Appliance
- Installation SVC : Oracle Exadata Database Machine
- Installation SVC : Oracle Private Cloud Appliance
- Installation SVC : Oracle Zero Data Loss and Recovery Appliance
- Installation SVC : StorageTek SL150
- Installation SVC : X86 Servers
- Installation SVC : ZFS Storage Appliance
- NAS Storage
- Oracle Big Data Appliance
- Oracle Exadata Database Machine
- Oracle FLEXCUBE
- Oracle Private Cloud Appliance
- Oracle Solaris
- Oracle Zero Data Loss Recovery Appliance
- Oracle x86 Systems
- Service: Oracle Business Intelligence Foundation Suite 11g
- Service: Oracle Data Integrator 12c
- Service: Oracle Database Appliance
- Service: Oracle Database Performance and Tuning
- Service: Oracle Exadata Database Machine
- Service: Oracle Linux 6
- Service: Oracle Real Application Clusters 12c

CI/CD PREGLED

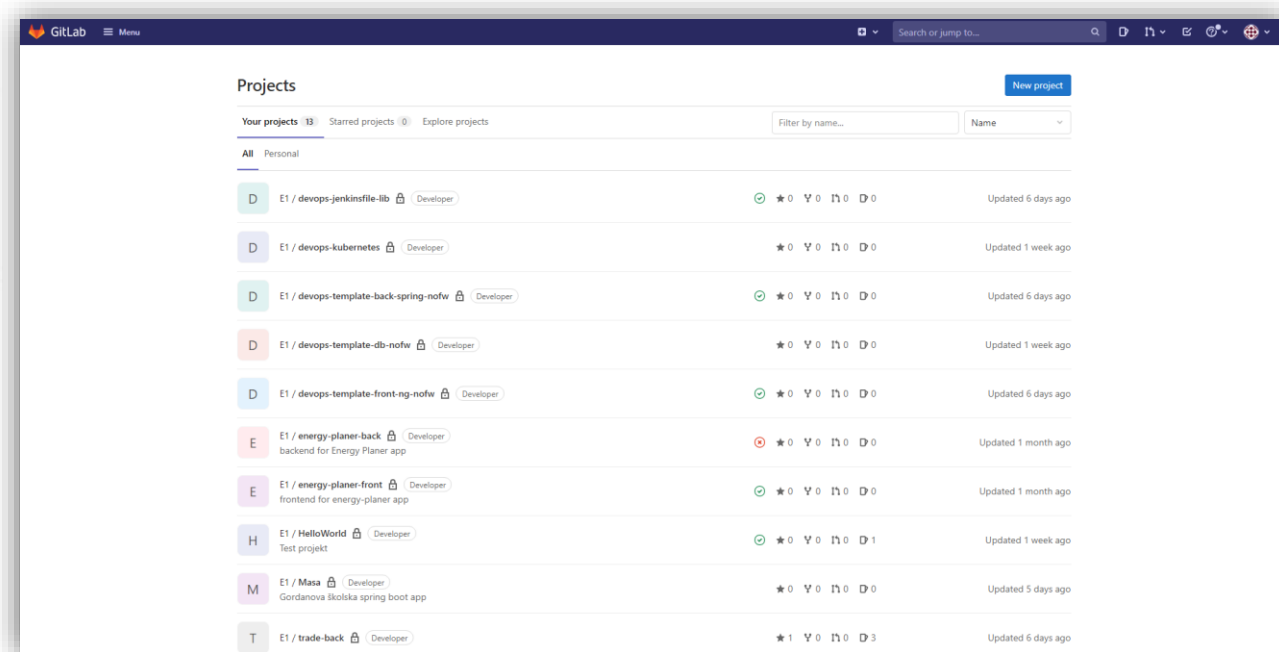


VERZIONIRANJE KODA



GitLab

OCI instanca
Master grana se štiti s MR

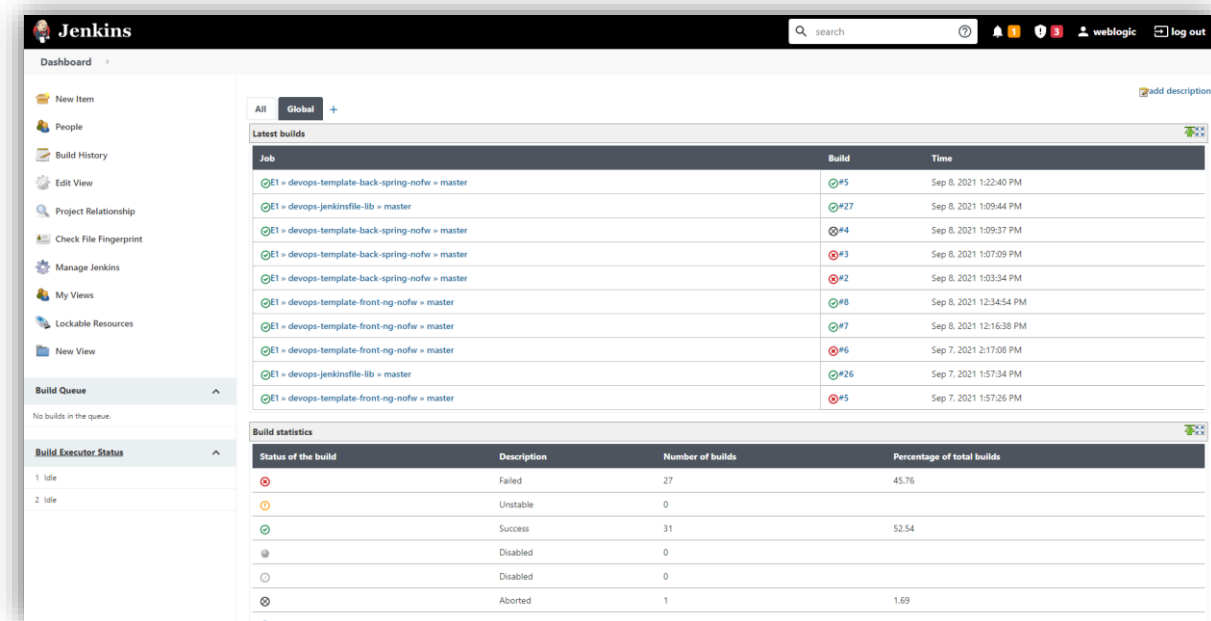


AUTOMATIZACIJA CI/CD



Jenkins

- OCI instanca
- Samo otkrivanje GitLab promjena
- Kreiranje Jenkins agenta na zahtjev
- Logovi nakon izvršavanja
- Ručno izvršavanje
- Koraci za projekte u posebnom GitLab repozitoriju



The screenshot shows the Jenkins dashboard with the following data:

Job	Build	Time
devops-template-back-spring-nofw » master	#5	Sep 8, 2021 1:22:40 PM
devops-jenkinsfile-lib » master	#27	Sep 8, 2021 1:09:44 PM
devops-template-back-spring-nofw » master	#4	Sep 8, 2021 1:09:37 PM
devops-template-back-spring-nofw » master	#3	Sep 8, 2021 1:07:09 PM
devops-template-back-spring-nofw » master	#2	Sep 8, 2021 1:03:34 PM
devops-template-front-ng-nofw » master	#8	Sep 8, 2021 12:34:54 PM
devops-template-front-ng-nofw » master	#7	Sep 8, 2021 12:16:38 PM
devops-template-front-ng-nofw » master	#6	Sep 7, 2021 2:17:08 PM
devops-jenkinsfile-lib » master	#26	Sep 7, 2021 1:57:34 PM
devops-template-front-ng-nofw » master	#5	Sep 7, 2021 1:57:26 PM

Status of the build	Description	Number of builds	Percentage of total builds
Failed	Failed	27	45.76
Unstable	Unstable	0	
Success	Success	31	52.54
Disabled	Disabled	0	
Disabled	Disabled	0	
Aborted	Aborted	1	1.69

TESTIRANJE

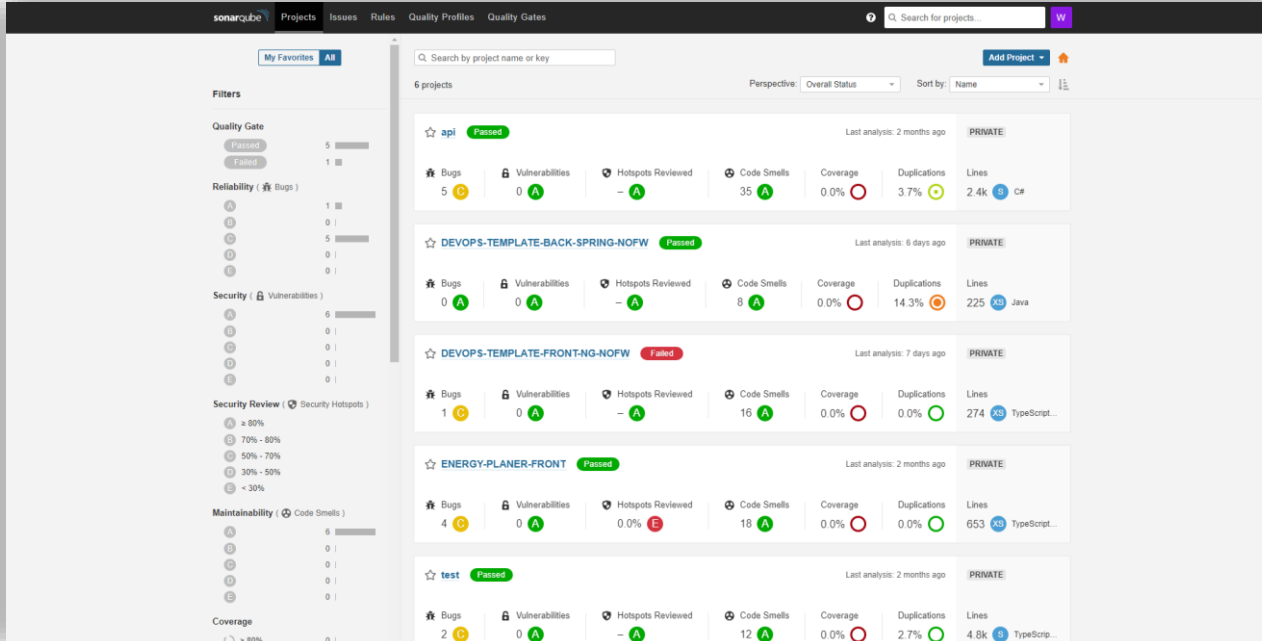


sonarqube



JUnit

OCI instanca
Statička analiza koda
Više dostupnih jezika
Quality gate HEP way, bez grešaka



The screenshot displays the SonarQube dashboard with the following data:

Project Name	Status	Last Analysis	Privacy	Bugs	Vulnerabilities	Hotspots Reviewed	Code Smells	Coverage	Duplications	Lines
api	Failed	2 months ago	PRIVATE	5 (C)	0 (A)	- (A)	35 (A)	0.0%	3.7%	2.4K (B) C#
DEVOPS-TEMPLATE-BACK-SPRING-NOFW	Passed	5 days ago	PRIVATE	0 (A)	0 (A)	- (A)	8 (A)	0.0%	14.3%	225 (A) Java
DEVOPS-TEMPLATE-FRONT-NG-NOFW	Failed	7 days ago	PRIVATE	1 (C)	0 (A)	- (A)	16 (A)	0.0%	0.0%	274 (A) TypeScript...
ENERGY-PLANNER-FRONT	Passed	2 months ago	PRIVATE	4 (C)	0 (A)	0.0% (E)	18 (A)	0.0%	0.0%	653 (A) TypeSc...
test	Passed	2 months ago	PRIVATE	2 (C)	0 (A)	- (A)	12 (A)	0.0%	2.7%	4.8K (B) TypeSc...

SPREMANJE OBJEKATA

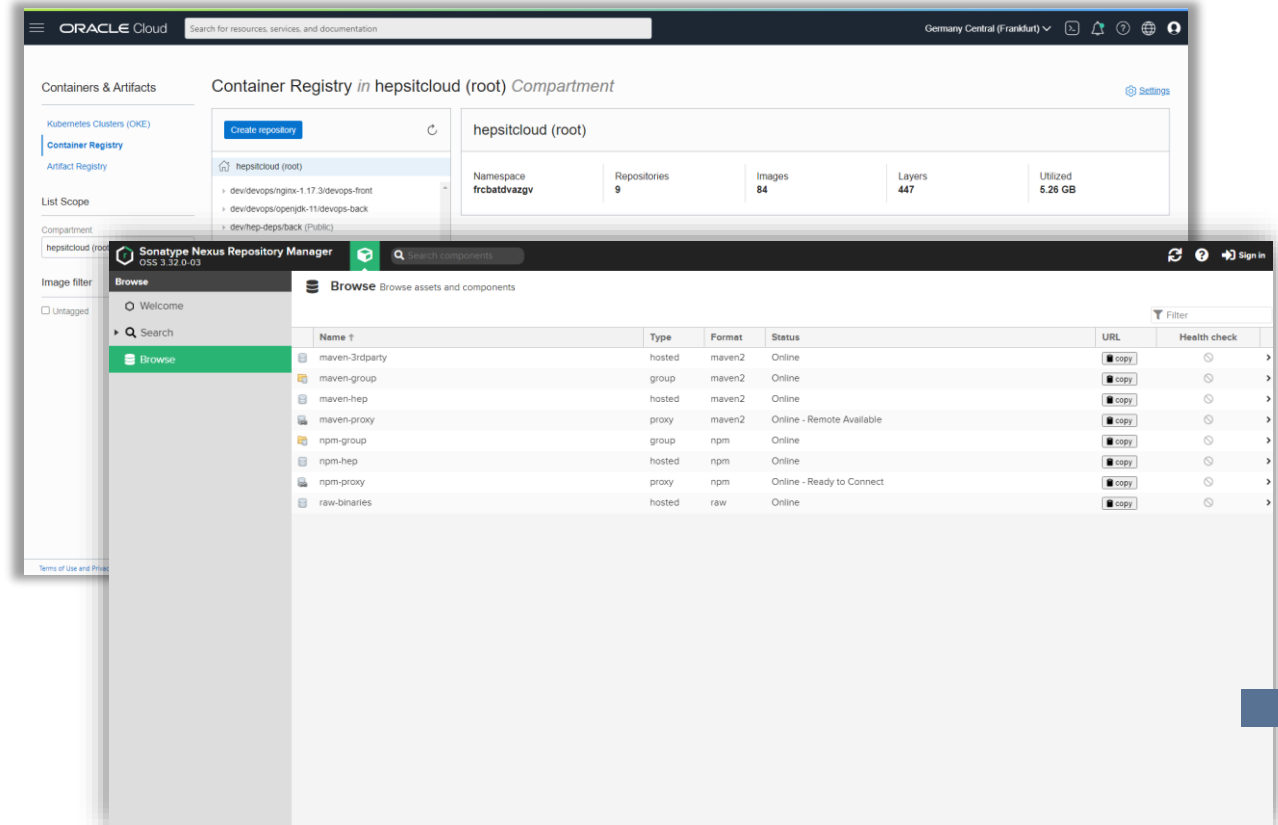


- Oracle Cloud Infrastructure Registry
- Aplikacijske Docker slike



Sonatype
Nexus

- OCI instanca
- Spremnik knjižnica i paketa
- Različiti tipovi repozitorija, Maven, NPM, arhivi, ...



The image shows two overlapping screenshots. The top one is the Oracle Cloud Container Registry interface, displaying the 'Container Registry in hepsitcloud (root) Compartment'. It shows a list of repositories under the 'hepsitcloud (root)' namespace, including 'dev/devops/nginx-1.17.3/devops-front', 'dev/devops/openjdk-11/devops-back', and 'dev/hep-deps/back (Public)'. A summary table indicates 9 repositories, 84 images, 447 layers, and 5.26 GB utilized.

The bottom screenshot is the Sonatype Nexus Repository Manager interface, showing a 'Browse' view of assets and components. The table below lists various repository types and their status:

Name	Type	Format	Status	URL	Health check
maven-3rdparty	hosted	maven2	Online		
maven-group	group	maven2	Online		
maven-hep	hosted	maven2	Online		
maven-proxy	proxy	maven2	Online - Remote Available		
npm-group	group	npm	Online		
npm-hep	hosted	npm	Online		
npm-proxy	proxy	npm	Online - Ready to Connect		
raw-binaries	hosted	raw	Online		

INSTALACIJA



OCI loadblanacer

OCI Web Application
Firewall za inteligentnu
zaštitu



kubernetes

OKE cluster za kontejnere

OKE development, test,
production okruženja

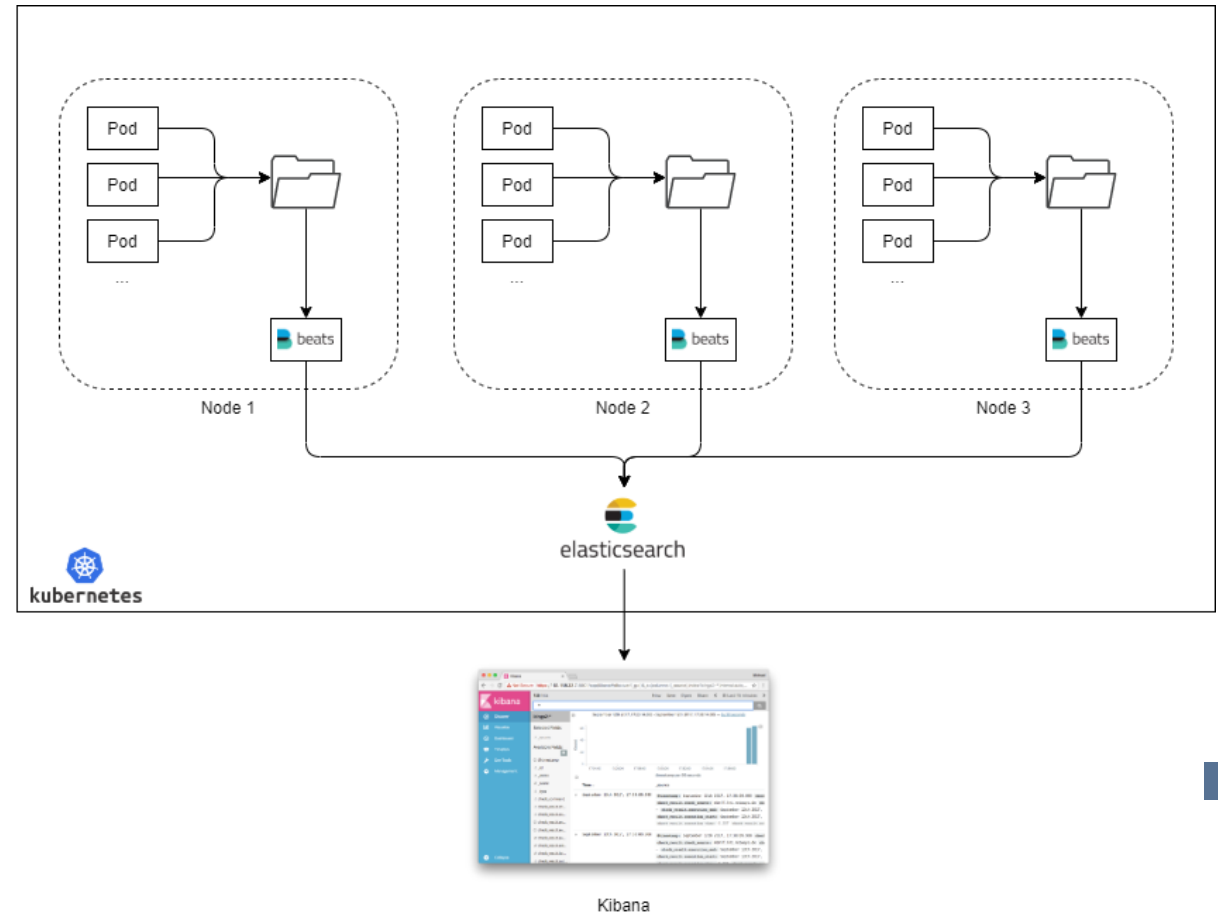


Oracle 19g baza na
lokaciji

EFK LOGIRANJE

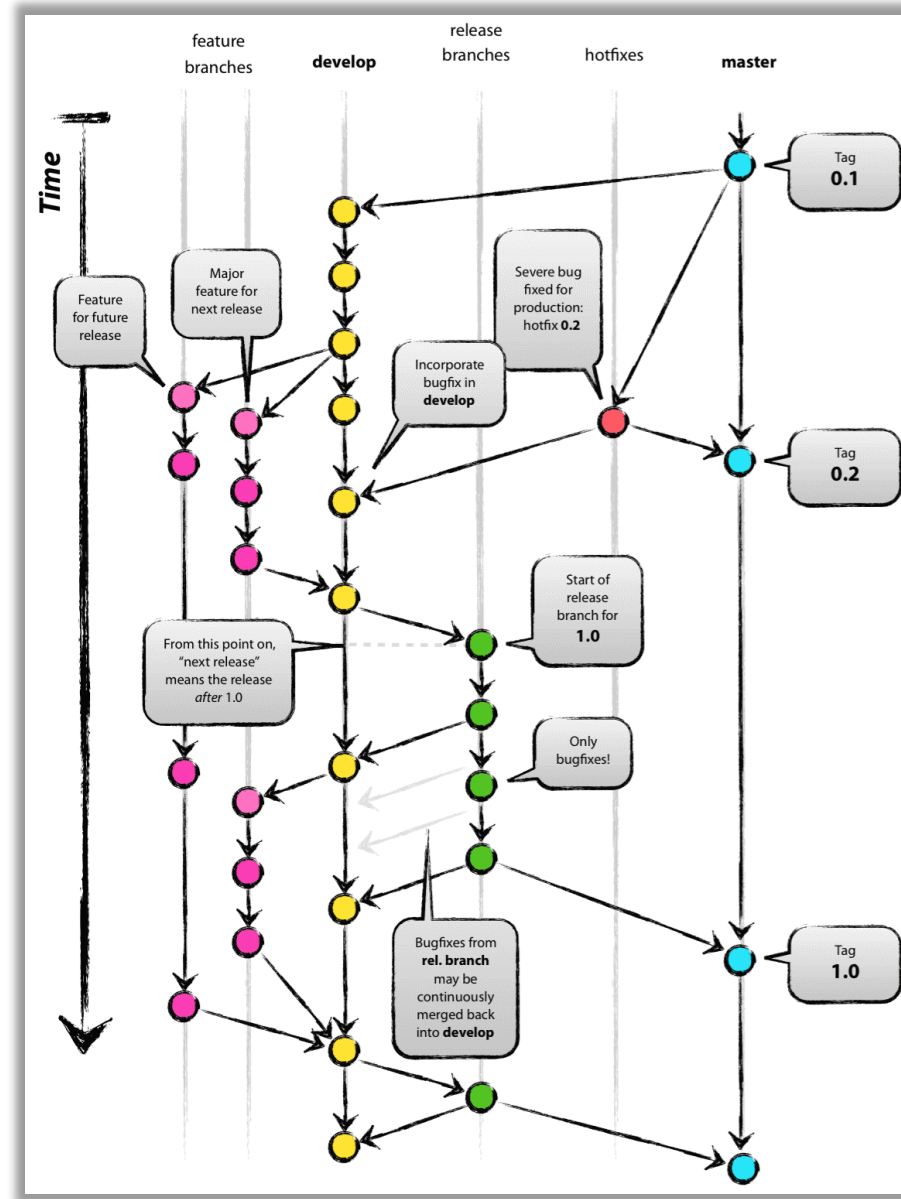


- OCI instanca
- Elasticsearch, Filebeat, Kibana
- Filebeat po OKE nodu
- Logstash Logback Encoder library



GIT NAČIN RADA

- Baziran na Git Flow načinu rada
- Poznat način rada, puno dokumentacije
- Push na develop granu instalira na razvojno okruženje
- Push na release/vM.m.p, hotfix/vM.m.p grane instalira na testno okruženje
- Tag vM.m.p na master granu, instalira na produkcijsku okruženje



ŠTO smo napravili?

- Uspostaviti 3-slojnu dev/test/prod arhitekturu i CI/CD pipeline
- Razvoj aplikativnih predložaka za ujednačavanje razvoja
- POC postojeće aplikacije s potpuno automatiziranim ciklusom
- Migracija baze na 19c
- Migracija aplikacije Vozni red
- Razvoj aplikacija Trade i Rezerve



WORK IN PROGRESS

ŠTO? Rizici, problemi, izazovi

- Raspoloživost resursa
 - Održavanje postojećih aplikacija
 - Tekuće obaveze
 - Neplanirani zadaci višeg prioriteta
- Otežano/sporije učenje i usvajanje promjena
- Spremnost na promjene
 - Suštinska, a ne deklarativna želja za promjenom
 - Izlazak iz komforne zone
 - Motivacija

ŠTO dalje?

- Razvoj planiranih aplikacija u portfelju HEP Trgovine
- Bilježenje iskustava i dobre prakse, usvajanje standarda i prihvatljive metodologije
- **Cloud native paradigma kao temelj budućeg razvoja**

A photograph of two men sitting on a patterned couch in a dimly lit room. Both men are wearing bright yellow hazmat suits and have several colorful cans (possibly soda) attached to their heads. The man on the left is holding a dark beer bottle. The man on the right is holding a small bottle and looking towards the camera. In front of them on a coffee table are two bowls of food, one containing red sauce, and another beer bottle. The background shows warm-toned curtains.

Hvala na pažnji!